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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,274	01/10/2002	Akira Fujibayashi	36992.00090 (HAL-ID-199)	8432
30256	7590	07/23/2004	EXAMINER	
SQUIRE, SANDERS & DEMPSEY L.L.P. 600 HANSEN WAY PALO ALTO, CA 94304-1043			DUNCAN, MARC M	
			ART UNIT	PAPER NUMBER
			2113	

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/044,274	FUJIBAYASHI, AKIRA
	Examiner	Art Unit
	Marc M Duncan	2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 January 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 20 is/are allowed.
- 6) Claim(s) 1-5,7-13 and 15-19 is/are rejected.
- 7) Claim(s) 6 and 14 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 January 2002 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Status of the Claims

Claims 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 17, 18 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Viswanathan et al.

Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viswanathan et al. in view of Kusters et al.

Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viswanathan et al.

Claims 6 and 14 are objected to.

Claim 20 is allowed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 17, 18 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Viswanathan et al.

Regarding claim 1:

Viswanathan teaches mirroring data from a primary storage device at a first location to a secondary storage device at a second location in col. 2 lines 13-15.

Mirrored file system volumes are primary and secondary storage devices at first and second locations.

Viswanathan teaches taking a snapshot of the primary storage device and of the secondary storage device in col. 2 lines 30-33.

Viswanathan teaches storing the primary storage device snapshot on a first snapshot volume at the first location in Fig. 1 "112."

Viswanathan teaches storing the secondary storage device snapshot on a second snapshot volume at the second location in Fig. 1 "112."

Viswanathan teaches updating a data structure to record backup times for the first and second snapshots and to record locations of the snapshots on the snapshot volumes in col. 4 lines 16-17. The backup times for the first and second snapshots are represented by the consistency point values. The backup times of the claim represent the point in time when the snapshots were created, essentially equivalent to the sequence represented by the consistency point values. The recording of the locations of the snapshots is inherent to computer storage. In order for the file system to access the snapshot information, it must have some record of where that information exists in the system.

Regarding claim 2:

Viswanathan teaches repeating the mirroring, taking, storing the primary storage device snapshot, storing the secondary storage device snapshot, and updating so as to store multiple generations of snapshots in col. 4 lines 20-21 and col. 5 lines 55-59.

Each volume stores multiple snapshots that were taken at consistent intervals.

Regarding claim 3:

Viswanathan teaches selecting a snapshot to use to restore data to the primary storage device in col. 5 lines 34-36.

Viswanathan teaches determining if the selected snapshot is stored at the first location in col. 5 lines 34-43.

Viswanathan teaches if the selected snapshot is stored at the first location, restoring data to the primary storage device using the selected snapshot generation at the first location in col. 5 lines 45-51. If the primary storage volume is the location with the maximum consistency point value, it generates the new snapshot having that maximum consistency value.

Viswanathan teaches if the selected snapshot is not stored at the first location, synchronizing the secondary storage device with the selected snapshot generation at the second location and then restoring data to the primary storage device using data from the synchronized secondary storage device in col. 5 lines 45-59. If the primary storage volume does not contain the maximum consistency point value, the primary storage volume waits for a secondary storage volume to generate the new snapshot and receives the updates from the secondary storage volume.

Regarding claim 4:

Viswanathan teaches wherein the taking of snapshots of the primary and secondary storage devices is done simultaneously in col. 4 lines 20-22 and lines 34-37. In order for the volumes to contain the same snapshots, the snapshots must be simultaneous.

Regarding claim 5:

Viswanathan teaches wherein the selecting selects the most recently created snapshot in col. 5 lines 34-59.

Regarding claim 9:

The claim is rejected as the computer program product for performing the method of claim 1.

Regarding claim 10:

The claim is rejected as the computer program product for performing the method of claim 2.

Regarding claim 11:

The claim is rejected as the computer program product for performing the method of claim 3.

Regarding claim 12:

The claim is rejected as the computer program product for performing the method of claim 4.

Regarding claim 13:

The claim is rejected as the computer program product for performing the method of claim 5.

Regarding claim 17:

The claim is rejected as the apparatus for performing the method of claim 1.

Regarding claim 18:

The claim is rejected as the apparatus for performing the method of claim 2.

Regarding claim 19:

The claim is rejected as the apparatus for performing the method of claim 3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viswanathan et al. in view of Kusters et al.

Regarding claims 7 and 15:

The teachings of Viswanathan are outlined above.

Viswanathan does not explicitly teach deleting the oldest snapshot at the first location and deleting the oldest snapshot at the second location. Viswanathan does, however, teach storing multiple generations of snapshots at each volume.

Kusters teaches deleting the oldest snapshot at the first location and deleting the oldest snapshot at the second location in col. 2 lines 42-48.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the deletion teaching of Kusters with the multiple snapshot generations of Viswanathan.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because by deleting the oldest snapshots, it is possible to reclaim the space taken up by those snapshots, which is an inherent need in any computer system.

Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viswanathan.

Regarding claims 8 and 16:

The teachings of Viswanathan are outlined above.

Viswanathan does not explicitly teach determining if the secondary storage device is solid state before taking a snapshot of the secondary storage device. Viswanathan does, however, teach the data of the snapshots being identical.

The examiner takes official notice that determining if a storage device is solid state before taking a snapshot was well known and obvious to those of ordinary skill in the art at the time of invention.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Viswanathan that snapshots should be identical with the method of determining if a storage volume is solid state prior to taking a snapshot.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Viswanathan explicitly states the need for the snapshot data to be identical. It was well known to those of ordinary skill in the art at the time of invention that determining if the storage device is solid state prior to taking a snapshot is necessary to be certain that the storage volumes were consistent and therefore that the snapshot data would be identical.

Allowable Subject Matter

Claims 6 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior art was not found that explicitly teaches or fairly suggests wherein the selecting selects a snapshot based on a user preference as outlined in claims 6 and 14. Prior art was not found that explicitly teaches or fairly suggests splitting the second logical volume from the first logical volume, splitting the third logical volume from the second logical volume, synchronizing the second logical volume with the first logical volume, splitting the second logical volume from the first logical volume, splitting the fourth logical volume from the second logical volume, and synchronizing the second logical volume with the first logical volume as outlined in claim 20.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art not relied upon contains elements of the instant claims and/or represents a current state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc M Duncan whose telephone number is 703-305-4622. The examiner can normally be reached on M-T and TH-F 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 703-305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

md


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